

**CALIFORNIA ENERGY COMMISSION**

1516 Ninth Street  
Sacramento, California 95814

Main website: [www.energy.ca.gov](http://www.energy.ca.gov)



**July 28, 2009**

**Addendum 5**

**PON-08-011**

**GRANT SOLICITATION APPLICATION PACKAGE**

**American Recovery and Reinvestment Act of 2009 Cost Share**

**PIER Energy Research, Development and Demonstration Program**

The purpose of this addendum is to add federal ARRA solicitation DE-FOA-0000122 (Community Renewable Energy Deployment) to PON-08-011 and to change the Pre-Application due date for the Solid State Lighting, Round IV – Core Funding Opportunity Announcement (DE-FOA-0000082) to August 3, 2009, and the Letter of Intent Dates. **Changes are highlighted in yellow.**

This addendum adds language to:

- “4. ARRA Funding Opportunity Announcements”
- Table 1
- Table 2
- Attachment A
- Attachment B
- Attachment C
- Attachment I

Sincerely,

Crystal Presley-Willis  
Grants and Loans Officer

## **ATTACHMENT A**

### **American Recovery and Reinvestment Act of 2009 Cost Share Instructions for Pre-Application Cover Page**

**Item a (Project Title):**

Provide a title for the project that is descriptive of the proposed work. The title must communicate the type of work being proposed. Avoid trademarked names and acronyms that are not well understood by the general public. The title shall not exceed 10 words.

**Item b (AARA Funding Opportunity Announcement):**

List the American Recovery and Reinvestment Act of 2009 funding opportunity announcement and number identifier to which you will be responding

**Item c (ARRA Funding Requested):**

Provide the amount of ARRA funds you are requesting from the federal government.

**Item d (Energy Commission Funds Requested):**

Specify the amount of cost share funds you are requesting from the Energy Commission, and the minimum funding (total from ARRA and Energy Commission and other sources) required to allow the project to proceed.

**Item e (Proposed Project Duration):**

Specify how many months you need to complete the project. Project duration cannot exceed 48 months.

**Item f (Project Category):**

Check the box that corresponds to the overall category of the project.

**Item g (Principal Investigator/Project Manager):**

In most cases the Principal Investigator also serves as the Project Manager. If this is not the case then list the Project Manager in this item.

**Item h (PI/PM Certification):**

Include the signature of the Principal Investigator/Project Manager. Include a date after the signature.

**Item h (Signature of Authorized Representative):**

Include the signature of the Authorized Representative. Include a date after the signature.

## ATTACHMENT A

### American Recovery and Reinvestment Act of 2009 Cost Share Pre-Application Cover Page

- a. Project Title: \_\_\_\_\_  
(not to exceed 10 words)
- b. ARRA Funding Opportunity Announcement: \_\_\_\_\_  
ARRA solicitation FOA/number/identifier: \_\_\_\_\_
- c. ARRA Funding Requested: \$ \_\_\_\_\_
- d. Energy Commission Funding Requested: \$ \_\_\_\_\_  
Minimum amount of Energy Commission funding required for the project to go forward:  
\$ \_\_\_\_\_
- e. Proposed Project Duration: \_\_\_\_\_ (Must not exceed 4 years.)
- f. Project Category (**Please check the appropriate box**):  
☐ Solar ☐ Geothermal ☐ Smart Grid  
☐ Advanced Building technologies ☐ Carbon Sequestration  
☐ Electric Energy Storage ☐ Other
- g. Principal Investigator/Project Manager (PI/PM): (serves as single point of contact for all communications)  
Name:  
Address:  
Phone: Fax:  
Email:  
Organization:  
Position/Title:
- h. PI/PM: To the best of my knowledge, I certify that the information contained in this grant application package is true, and discloses all requested information. Proposal does not contain proprietary information, unrestricted distribution authorized.  
  
PI/PM Signature: \_\_\_\_\_ Date: \_\_\_\_\_
- i. Authorized Representative: To the best of my knowledge all information in the application is correct and complete.  
  
Authorized Representative's Signature: \_\_\_\_\_  
Date: \_\_\_\_\_

#### **4. ARRA Funding Opportunity Announcements:**

To participate in this solicitation, applicants must submit applications to the federal government in response to one or more of the following ARRA funding opportunity announcements:

- Enhanced Geothermal Systems Component Research and Development/Analysis, DE-FOA-0000075
- Enhanced Geothermal Systems Demonstration, DE-FOA-0000092
- Geothermal Technologies Program, DE-FOA-0000109
- High Penetration Solar Deployment, DE-FOA-0000085
- Building America Energy Efficient Housing, DE-FOA-0000099
- Solid State Lighting Round IV Core, DE-FOA-0000082
- Training Program Development for Commercial Building Equipment Technicians, Building Operators, Energy Commissioning Agents/Auditors, DE-FOA-0000118
- Solid State Lighting Product Development Round VI, DE-FOA-0000055
- Energy Efficient Information and Communication Technology, DE-FOA-0000107
- Smart Grid Investment Grant Program, DE-FOA-0000058
- Smart Grid Demonstrations, DE-FOA-0000036
- Geological Sequestration Training and Research, DE-FOA-0000032
- Site Characterization of Promising Geologic Formations for CO2 Storage, DE-FOA-0000033
- Carbon Capture and Sequestration from Industrial Sources and Innovative Concepts for Beneficial CO2 Use, DE-FOA-0000015
- Advanced Energy Efficient Building Technologies, DE-FOA-0000115
- Community Renewable Energy Deployment, DE-FOA-0000122

**The Energy Commission reserves the right to add or delete ARRA funding opportunity announcements from this Solicitation.**

Table 1: Due Dates and FOA Specific information

ARRA Funding Opportunity Announcement (FOA)	FOA Issue Date	Pre-Applications to Energy Commission by 4:00 p.m.	LOI Provided to Applicants	Final Applications to Energy Commission by 4:00 p.m.	Tentative Dates for Federal Award Notifications	Technical Contact	Workshop Date
Enhanced Geothermal Systems Component Research and Development/ Analysis DE-FOA 0000075	5/27/09	7/07/09	7/13/09	7/27/09	9/09	Gail Wiggett <a href="mailto:gwiggett@energy.state.ca.us">gwiggett@energy.state.ca.us</a> (916) 653-7551	<b>Date:</b> June 26, 2009 <b>Time:</b> 9:00-11:00 a.m. <b>Location:</b> 1516 9 <sup>th</sup> Street, Sacramento, CA 95814, Hearing Room B <b>Computer Logon:</b> <a href="https://energy.webex.com">https://energy.webex.com</a> meeting # 923 835 568 Password: meeting@9am.
Enhanced Geothermal Systems Demonstration DE-FOA-0000092	5/27/09	7/20/09	7/29/09	8/06/09	9/09	Gail Wiggett	<b>Date:</b> June 26, 2009 <b>Time:</b> 9:00-11:00 am
Geothermal Technologies Program DE-FOA-0000109	5/27/09	7/13/09	7/22/09	7/29/09	12/09-1/10	Gail Wiggett	<b>Date:</b> June 26, 2009 <b>Time:</b> 9:00-11:00 a.m.
High Penetration Solar Deployment DE-FOA-0000085	5/27/09	7/16/09	7/23/09	8/06/09	8/09	Prab Sethi <a href="mailto:psethi@energy.state.ca.us">psethi@energy.state.ca.us</a> 916-654-4509	<b>Date:</b> June 26, 2009 <b>Time:</b> 1:00-3:00 p.m.
Building America	6/29/09	8/10/09	8/19/09	10/5/09	11/09	Elaine Hebert	

DE-FOA-0000099						Ehebert@energy.state.ca.us 916-654-4800	
Solid State Lighting Round IV, DE-FOA-000082	6/29/09	08/03/09	8/6/09	09/21/2009	11/09	Michael Seaman Mseaman@energy.state.ca.us 916- 654-4981	
Training Program, DE-FOA-0000118	6/29/09	07/27/09	08/12/09	09/21/09	11/09	Chris Scruton cscruton@energy.state.ca.us 916-653-0948	
Solid State Lighting Product Development Round VI, DE-FOA-0000055	6/29/09	8/3/09	8/12/09	9/28/09	11/09	Michael Seaman Mseaman@energy.state.ca.us 916- 654-4981	
Energy Efficient Information and Communication Technology, DE-FOA-0000107	6/2/09	7/15/09	7/21/09	9/8/09	10/09	Paul Roggensack proggens@energy.state.ca.us 916-654-6560	
Smart Grid Investment Grant Program DE-FOA-0000058	6/25/09	7/23/09	8/4/09	8/06/09	10/09	Pedro Gomez pgomez@energy.state.ca.us 916-653-4278	<b>Date:</b> July 20, 2009 <b>Time:</b> 1:00-4:00 p.m.  <b>Location:</b> 1516 9 <sup>th</sup> Street, Sacramento, CA 95814, Hearing Room B  <b>Computer Logon:</b> <a href="https://energy.webex.com">https://energy.webex.com</a> meeting # 929 745 862 Password: meeting
Smart Grid	6/25/09	8/3/09	8/20/09	8/26/09	11/09	Pedro Gomez	<b>Date:</b> July 20, 2009 <b>Time:</b> 1:00-4:00

Demonstrations DE-FOA-0000036							<p>p.m.</p> <p><b>Location:</b> 1516 9<sup>th</sup> Street, Sacramento, CA 95814, Hearing Room B</p> <p><b>Computer Logon:</b>  <a href="https://energy.webex.com">https://energy.webex.com</a>  meeting # 929 745 862  Password: meeting@1pm.</p>
Geologic Sequestration Training and Research DE-FOA-0000032	6/29/09	7/23/09	8/4/09	8/11/09	12/23/09	Pedro Gomez	<p><b>Date:</b> July 20, 2009  <b>Time:</b> 9:00-12:00 p.m.</p> <p><b>Location:</b> 1516 9<sup>th</sup> Street, Sacramento, CA 95814, 2<sup>nd</sup> Floor Conference Room</p> <p><b>Computer Logon:</b>  <a href="https://energy.webex.com">https://energy.webex.com</a>  meeting # 920 530 021  Password: meeting@9am.</p>
Site Characterization of Promising Geologic Formations for CO2 Storage DE-FOA-0000033	6/2/09	7/23/09	8/4/09	8/03/09	12/15/09	Pedro Gomez	<p><b>Date:</b> July 20, 2009  <b>Time:</b> 9:00-12:00 p.m.</p> <p><b>Location:</b> 1516 9<sup>th</sup> Street, Sacramento, CA 95814, 2<sup>nd</sup> Floor Conference Room</p> <p><b>Computer Logon:</b>  <a href="https://energy.webex.com">https://energy.webex.com</a>  meeting # 920 530 021</p>

							Password: meeting@9am
Carbon Capture and Sequestration from Industrial Sources and Innovative Concepts for Beneficial CO2 Use DE-FOA-0000015	6/08/09	7/23/09	8/4/09	8/07/09	9/09	Pedro Gomez	<b>Date:</b> July 20, 2009 <b>Time:</b> 9:00-12:00 p.m. <b>Location:</b> 1516 9 <sup>th</sup> Street, Sacramento, CA 95814, 2 <sup>nd</sup> Floor Conference Room <b>Computer Logon:</b> <a href="https://energy.webex.com">https://energy.webex.com</a> meeting # 920 530 021 Password: meeting@9am
Advanced Energy Efficient Building Technologies, DE-FOA-0000115	6/29/09	8/3/09	8/12/09	10/5/09	12/09	Norm Bourassa <a href="mailto:njbouras@energy.state.ca.us">njbouras@energy.state.ca.us</a> (916) 654-4581	
Community Renewable Energy Deployment, DE-FOA-0000122	7/15/09	8/13/09	8/27/09	9/14/09	12/09	Rizaldo Aldas <a href="mailto:raldas@energy.state.ca.us">raldas@energy.state.ca.us</a> (916) 654-4037	

Note: Scoring Criteria for all applications are in Attachment C, and identified by federal solicitation number.



Table 2: Funding Maximums by FOA

ARRA Funding Opportunity Announcement	Maximum Energy Commission Cost Share for a Single project
Enhanced Geothermal Systems Component Research and Development/Analysis, DE-FOA-0000075	\$380,000
Enhanced Geothermal Systems Demonstration, DE-FOA-0000092	\$250,000
Geothermal Technologies Program, DE-FOA-0000109	\$410,000
High Penetration Solar Deployment, DE-FOA-0000085	\$500,000
Building America EE Housing, DE-FOA-0000099	\$200,000
Solid State Lighting Round IV Core, DE-FOA-0000082	\$200,000
Training Program, DE-FOA-0000118	\$120,000
Solid State Lighting Product Development Round VI, DE-FOA-0000055	\$200,000
Energy Efficient Information and Communication Technology, DE-FOA-0000107	\$250,000
Smart Grid Investment Grant Program DE-FOA-0000058	Maximum \$1,000,000 or up to 10% of the DOE award amount whichever is less
Smart Grid Demonstrations DE-FOA-0000036	Maximum \$1,000,000 or up to 10% of the DOE award amount whichever is less
Geologic Sequestration Training and Research DE-FOA-0000032	Maximum \$30,000 or up to 20% of the DOE award amount whichever is less
Site Characterization of Promising Geologic Formations for CO2 Storage DE-FOA-0000033	Maximum \$500,000 or up to 20% of the DOE award amount whichever is less
Carbon Capture and Sequestration from Industrial Sources and Innovative Concepts for Beneficial CO2 Use DE-FOA-0000015	Maximum \$300,000 or up to 20% of the DOE award amount whichever is less
Advanced Energy Efficient Building Technologies, DE-FOA-0000115	\$400,000

Community Renewable Energy Deployment, DE-FOA-0000122	\$500,000
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## ATTACHMENT B

### American Recovery and Reinvestment Act of 2009 Cost Share Pre-Application Project Summary Requirements

The Pre-application project summary must address the requirements specified in the relevant section below. **Please limit your response to no more than five pages.** Be as concise as possible.

#### I. Solar (DE-FOA-0000085) pre-application

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered and project duration.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for other similar applications in the State of California.
4. Describe the potential impact of the technology on California industry, market and accelerated deployment of renewable energy. Explain projected cost reduction impact in dollar/watt and levelized cost of electricity.
5. Describe how the proposed project will help meet the goals of California Solar Initiative, California's Renewable Portfolio Standard, and California's Global Warming Solutions Act (AB 32). Quantify results and benefits for above mentioned policy goals.
6. Discuss proposed project system integration with the California utility grid and resulting benefits.

#### II. Geothermal pre-application

All Applicants:

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, products to be delivered and project duration.
2. List additional funding partners, and the total project budget. List team members (such as universities, national laboratories and utilities) and project site location.
3. Describe the products to be delivered.
4. How will this project support California's economic recovery in the near term and create or sustain jobs and local income or tax revenue? Quantify your answers to the extent possible, and include time frames.

Please answer the additional questions for each specific FOA for which you are applying:

EGS Component R&D/Analysis DE-FOA-0000075:

- a. Have you chosen a site(s) in California to demonstrate or test this technology and at what other sites would you expect this technology to be useable, if successful? Have you discussed

the deployment of this technology with companies operating in California? If so describe the results.

**EGS Demonstration DE-FOA-0000092:**

- b. The U.S. Department of Energy envisions a 4-6 year time frame for these projects, but there is a need to increase power production as quickly as possible to facilitate economic recovery. Describe the site-specific factors that would cause the recipient to shorten or lengthen this time frame.
- c. Any new power plant built in California will face issues surrounding connection to the transmission grid. Describe as specifically as possible the ability of a power plant at the project demonstration site to connect to the grid in California. Include quantities such as distances to collection lines or substations, feed in capacities, connection voltages, distance, isolation, power quality, voltage and metering.

**Geothermal Technologies DE-FOA-0000109:**

- d. Have you chosen a site(s) in California to demonstrate or test this technology and at what other sites would you expect this technology to be useable, if successful? Have you discussed the deployment of this technology with companies operating in California? If so, describe the results.

**III. Advanced Energy Efficient Building Technologies (DE-FOA-0000115) pre-application**

- 1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered and project duration.
- 2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
- 3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for use in the State of California.
- 4. Describe the potential impact of the project on California industry and markets and how it accelerates deployment of energy efficiency. Explain projected cost reduction impact (e.g., annual energy and cost savings and demand savings).
- 5. Describe how the proposed project will help meet the goals of the California's Global Warming Solutions Act (AB 32). Quantify results and benefits.
- 6. Describe how this project will support California's economic recovery in the near term and create or sustain jobs and local income or tax revenue. Quantify your answers to the extent possible, and include time frames.

**IV. Building America (DE-FOA-0000099) pre-application**

- 1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered and project duration.
- 2. State the amount of funding needed from the Energy Commission, other match funding

partners, and the total project budget. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.

3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for use in the State of California.
4. Describe the potential impact of the project on California industry and markets and how it accelerates deployment of energy efficiency. Explain projected energy cost reduction impact (e.g., annual energy and cost savings and demand savings).
5. Describe how the proposed project will help meet the goals of the California's Global Warming Solutions Act (AB 32). Quantify results and benefits.
6. Describe how this project will support California's economic recovery in the near term and create or sustain jobs and local income or tax revenue? Quantify your answers to the extent possible, and include time frames.

#### **V. Solid State Lighting Core Round IV (DE-FOA-0000082) pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered and project duration.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed technology vs. current systems, and broad applicability and adaptability for use in the State of California.
4. Describe the potential impact of the technology on California's lighting industry and markets and how it accelerates and advances energy efficient lighting. Explain projected cost reduction impact (e.g., annual energy and cost savings and demand savings).
5. Describe how the proposed project will help meet the goals of the California's Global Warming Solutions Act (AB 32). Quantify results and benefits.

#### **VI. Solid State Lighting Product Round VI (DE-FOA-0000055) pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered and project duration.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed project vs. current systems, and broad applicability and adaptability for use in the State of California.
4. Describe the potential impact of the technology on California's lighting industry and market and how it accelerates and advances energy efficient lighting. Discuss the plan for accelerated deployment of the product. Explain projected cost reduction impact (e.g., annual energy and cost savings and demand savings).

## **VII. Training Program (DE-FOA-0000118) pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered and project duration.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed project vs. current practices, and broad applicability and adaptability for use the State of California.
4. Describe the potential impact of the project on California's energy efficiency industry and markets. Discuss how it advances and accelerates energy efficiency deployment in California. Explain projected cost reduction impact (e.g., annual energy and cost savings and demand savings).
5. Describe how the proposed project will help meet the goals of the California's Global Warming Solutions Act (AB 32). Quantify results and benefits.

## **VIII. Energy Efficient Information and Communication Technology (DE-FOA-0000107) Pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered and project duration.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed project vs. current practices, and broad applicability and adaptability for the State of California.
4. Describe the potential impact of the technology on California information technology and communication industry. Explain projected cost reduction impact (e.g., annual energy and cost savings and demand savings).
5. Describe how the proposed project will help meet the goals of the California's Global Warming Solutions Act (AB 32). Quantify results and benefits.

## **IX. Smart Grid Demonstrations (DE-FOA-0000036) Pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered, project duration, costs and benefits.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. Identify the collaborating grid owner for your project and include point of contact. List team members (such as universities, national laboratories and

utilities), relevant experience and project site location.

3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for other similar applications in the State of California.
4. Describe the potential impact of the technology on California industry, market and accelerated deployment of renewable energy technologies.
5. Describe the proposed project. Identify the application category from the following list:
  - Battery Storage for Utility Load Shifting or for Wind Farm Diurnal Operations and Ramping Control
  - Frequency Regulation Ancillary Services
  - Distributed Energy Storage for Grid Support
  - Compressed Air Energy Storage (CAES)
  - Demonstration of Promising Energy Storage Technologies

#### **X. Smart Grid Investment Grant Program (DE-FOA-0000058) Pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered, project duration, costs and benefits.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. Identify the collaborating grid owner for your project and include point of contact. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for other similar applications in the State of California.
4. Describe the potential impact of the technology on California industry, market and accelerated deployment of renewable energy technologies.
5. Describe the proposed project. Identify the “smart grid functions” application category from the following list:
  - a. “The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations, to or from or by means of the electric utility system, through one or a combination of devices and technologies.
  - b. The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations to or from a computer or other control device.
  - c. The ability to measure or monitor electricity use as a function of time of day, power quality characteristics such as voltage level, current, cycles per second, or source or type of generation and to store, synthesize or report that information by digital means.
  - d. The ability to sense and localize disruptions or changes in power flows on the grid and communicate such information instantaneously and automatically for purposes of enabling automatic protective responses to sustain reliability and security of grid operations.



- e. The ability to detect, prevent, communicate with regard to, respond to, or recover from system security threats, including cyber-security threats and terrorism, using digital information, media, and devices.
- f. The ability of any appliance or machine to respond to such signals, measurements, or communications automatically or in a manner programmed by its owner or operator without independent human intervention.
- g. The ability to use digital information to operate functionalities on the electric utility grid that were previously electro-mechanical or manual.
- h. The ability to use digital controls to manage and modify electricity demand, enable congestion management, assist in voltage control, provide operating reserves, and provide frequency regulation.”
- i. Other as described in the FOA.

## **XI. Geologic Sequestration Training and Research (DE-FOA-0000032) Pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered, project duration, costs and benefits.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. Identify the collaborating grid owner for your project and include point of contact. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for other similar applications in the State of California.
4. Describe the potential impact of the technology on California industry, market and accelerated deployment of renewable energy technologies.
5. Describe the relationship (if any) of the proposed project to ongoing WESTCARB regional partnership activities.

## **XII. Site Characterization of Promising Geologic Formations for CO2 Storage (DE-FOA-0000033) Pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered, project duration, costs and benefits.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. Identify the collaborating grid owner for your project and include point of contact. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for other similar applications in the State of California.
4. Describe the potential impact of the technology on California industry, market and accelerated deployment of renewable energy technologies.
5. Describe the relationship (if any) of the proposed project to ongoing WESTCARB regional



partnership activities.

### **XIII. Carbon Capture and Sequestration from Industrial Sources and Innovative Concepts for Beneficial CO2 Use (DE-FOA-0000015) Pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered, project duration, costs and benefits.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. Identify the collaborating grid owner for your project and include point of contact. List team members (such as universities, national laboratories and utilities), relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for other similar applications in the State of California.
4. Describe the potential impact of the technology on California industry, market and accelerated deployment of renewable energy technologies.
5. Describe the relationship (if any) of the proposed project to ongoing WESTCARB regional partnership activities.
6. If responding to technology area 1: State whether the proposed storage is in a saline formation or an oil/gas reservoir.
7. Define the CO2 source - refinery, cement plant, etc.

### **XIV. Community Renewable Energy Deployment (DE-FOA-0000122) pre-application**

1. Describe the proposed project. Identify specific quantified goals, address barriers and their resolution, tasks, products to be delivered and project duration.
2. State the amount of funding needed from the Energy Commission, other match funding partners, and the total project budget. List project team members, relevant experience and project site location.
3. Describe the products to be delivered. Discuss anticipated performance improvements (technical and operational) of the proposed development vs. current practices, and broad applicability and adaptability for other similar applications in the State of California.
4. Describe the potential impact of the technology on California industry, market and accelerated deployment of renewable energy. Explain projected cost reduction impact in dollar/watt and levelized cost of electricity.
5. Describe how the proposed project will help meet the goals of California's Renewable Portfolio Standard, and California's Global Warming Solutions Act (AB 32). Quantify results and benefits for above mentioned policy goals.
6. Discuss proposed project system integration with the California utility grid and resulting benefits.

## **ATTACHMENT C**

### **American Recovery and Reinvestment Act of 2009 Cost Share Final Application Scoring Criteria**

The Energy Commission will fully evaluate each proposed project using the scoring criteria and methodology described in the relevant sections below. Applicants' responses to the scoring criteria must be based on the entire project as proposed to the Federal government in response to an ARRA solicitation, and may not be limited to the portion of the project for which Energy Commission cost share funds are being requested.

**Applicants must provide no more than 20 pages, using 12 point font, single space and one inch margin on all sides, of qualitative and quantitative supporting documents for this attachment.**

#### **I. Solar applications (DE-FOA-0000085)**

##### **1. Technical Merit:**

**Maximum Possible Points: 20**

- The current status of the proposed technology as it has been developed by the research and industrial community at large.
- How the proposed project will address current barriers or knowledge gaps to advance the state-of-the-art and market acceptance.
- Past and current work in the subject technology performed by the project team and others, including successes and failures.
- The extent to which the project will address the objectives of the PIER Program in the area of Solar and Energy Storage.
- How the proposed project will help meet the goals of California Solar Initiative, California's Renewable Portfolio Standard, and California's Global Warming Solutions Act (AB 32).

##### **2. Description of Proposed RD&D**

**Maximum Possible Points: 30**

- The technical tasks are clearly and logically presented, with appropriate objectives, logical and discrete tasks, sequence of activities, products produced, deliverables, schedule, and budget.

- The application describes the scientific and technical principles underlying the proposed work, and the manner in which the scientific and engineering principles will be applied.
- The distinctive and innovative features of the approach are discussed.
- The likelihood of success based upon a sound research plan.

### **3. Identified Targets, Goals, and Market Application**

**Maximum Possible Points: 25**

- The proposed project is cost-effective and will significantly help in adding additional solar generation capacity.
- The extent to which the project addresses significant key issues and barriers to the development and market acceptance of solar technology.
- Quantitative or measurable technical and economic performance goals and the methodology used to determine if the goals have been achieved.
- How the project will fulfill market needs. A reasonable path is described for commercialization of the technology if the project is successful.
- Quantified results and benefits for meeting policy goals of CSI, RPS and AB 32.

### **4. Qualifications of Project Manager and Project Team**

**Maximum Possible Points: 25**

- The Project Manager and team members have the technical capabilities, specific experience and financial capability to successfully complete the project.
- The Project Manager can successfully manage the project, control cost, and maintain the schedule, and report results and accomplishments in an effective manner.
- The application clearly and adequately presents capabilities and experience of the team members to perform the proposed work for different tasks.
- The application presents the team members' collaboration to perform and facilitate transfer of project products to the marketplace. Is electric utility part of the team?
- The project cost is consistent with the work to be performed and is justified.
- The PIER funding request, match funding, and need for PIER funding are appropriate and consistent with the expected level of public benefits if the project is successful

## **II. Geothermal applications (DE-FOA0000075, DE-FOA-0000092, DE-FOA-0000109)**

### **1. Policy**

**Maximum Possible Points: 5**

- The degree to which the project addresses key issues or problems facing the geothermal industry in California and/or:
- Is applicable to relevant goals and objectives stated in the Commission's Energy Action Plan (available on the Energy Commission website at [www.energy.ca.gov](http://www.energy.ca.gov) ) and/or:
- Accelerates the goals of the California Renewable Portfolio Standard, SB 1078.

**2. Increased Geothermal Presence in California** Maximum Possible Points: 5

- The degree to which the project can demonstrate the ability to attract and support geothermal development of new or underutilized geothermal resources in California and/or enhance existing resources.

**3. Public vs. Private Benefits** Maximum Possible Points: 5

- The degree to which the project is likely to create or retain jobs, provide local revenue and support California businesses;
- The degree to which the project demonstrates overall benefits to California in addition to private benefits to the applicant, with consideration of the proportion of match provided by the applicant from other than public sources.

**4. Innovation** Maximum Possible Points: 10

- The degree to which the application demonstrates that the project will increase the reliability of site characterization, and/or:
- Lead to improved well targeting, innovations in tools, models, remote sensing, reservoir management and modeling, or other applications usable in California, above and beyond what is present practice.

**5. Technical Merit** Maximum Possible Points: 15

- As applicable, the degree to which the application demonstrates the technical merit and feasibility of the proposed work, including but not limited to, understanding of the current state of the art within California;
- Adequacy of the existing site characterization data and/or understanding of the resource quality and potential;
- Adequacy of the plan to validate and test the proposed technology or measure the success of a field stimulation/enhancement activity.

**6. Project Implementation** Maximum Possible Points: 15

- Clarity of statement of goals and objectives, including specific measures of success;
- Adequacy and clarity of a plan to address potential risks, liabilities, or problems that may arise;
- Adequacy and reasonableness of the budget;
- Appropriateness of proposed decision points and milestones.

**7. Life Cycle Costs** Maximum Possible Points: 15

- The degree to which the project reduces the life-cycle cost of geothermal electricity generation in California by, including but not limited to, improving the efficiency and reducing the cost of resource exploration and assessment, permeability detection, mapping, well siting, drilling and well completion, power plant design and construction, reservoir monitoring and management, or power plant surface facilities.

**8. Efficiency and Capacity**

Maximum Possible Points: 15

- The degree to which the project increases the capacity, efficiency and/or sustainability of existing California geothermal facilities and/or:
- Adds new geothermal generation capacity in California, creates value-added products and income streams from existing plants and/or:
- Reduces operation and maintenance costs of wells and plants.

**9. Likelihood of Success**

Maximum Possible Points: 5

- The degree to which the applicant demonstrates the ability to implement and complete the project, including but not limited to, the qualifications and experience of the team; feasibility of the project at the proposed site; cost-effectiveness; clarity, conciseness and quality of the research and implementation plan; and the degree of commitment from other partners.

**10. Tech transfer**

Maximum Possible Points: 5

- If applicable, the degree to which the technology, methods or products are transferable to other geothermal fields within California, and the adequacy of the technology transfer or information dissemination plan.

**11. Potential major hurdles and other considerations**

Maximum Possible Points: 5

- As applicable, the extent of the characterization, planning and regulatory and environmental permitting and status of CEQA compliance, and/or:
- The demonstrated availability and sustainability of sufficient water or other means for a stimulation or enhancement project; and/ or:
- Adequacy of transmission availability to support the proposed project in a timely fashion; and/or:
- Extent to which the project may contribute to or fit in with a local distributed generation system or integrate with other renewables.

**III Training Program Development for Commercial Building Equipment Technicians, Building Operators, Energy Commissioning Agents/Auditors Applications (DE-FOA-0000118)**

**1 Qualifications of Team and Institution**

Maximum Possible Points: 20

- Experience with curriculum and or program development
- Teaching/training experience
- Established institution
- Credentials of team members
- Experience and qualifications with subject matter

- 2 Scalability of Research Project Results Maximum Possible Points: 20**
- Can development products be used in other institutions
  - Intellectual property issues
  - Transfer media and accessibility
  - Educational market size
  - Infrastructure requirements for deployment and use
- 3 Need for Research Products Maximum Possible Points: 20**
- Similarity of comparable program materials
  - Institutional demand for materials
  - Ready student population for materials
  - Demand for trained workforce
- 4 Potential Energy Impacts Maximum Possible Points: 20**
- Training addresses a significant energy issue
  - Training has potential to impact issue
- 5 Connections to Marketplace Maximum Possible Points: 20**
- Training materials have conduit to marketplace
  - Institutions or media have strong market presence
  - Relevance to certification standards

**IV Solid State Lighting (Core and Product Development) Applications (DE-FOA-0000082, DE-FOA-0000055)**

- 1 Qualifications of Team and Institution Maximum Possible Points: 20**
- Experience with product/technology development
  - Established institution or company
  - Credentials of team members
  - Experience and qualifications with subject matter
- 2 Scalability of Research Project Results Maximum Possible Points: 20**
- Research products can be used by other institutions/companies
  - Intellectual property issues
  - Technology Transfer potential
  - Market size
- 3 Need for Research Products Maximum Possible Points: 20**
- Similarity of existing or soon-to-be-developed products
  - Commercial demand for products
  - Qualified companies available for product manufacture
- 4 Potential Energy Impacts Maximum Possible Points: 20**
- Product addresses a significant energy issue
  - Product has potential to impact issue
  - Likelihood of technical success
- 5 Connections to Marketplace Maximum Possible Points: 20**

- Products have conduit to marketplace
- Companies involved have strong market presence
- Meets or exceeds relevant performance standards
- Likelihood of commercial success

## **V Building America Energy Efficient Housing Applications (DE-FOA-0000097)**

- 1 Qualifications of Team and Institution** **Maximum Possible Points: 20**
  - Experience with building technology development
  - Established institution or company
  - Credentials of team members
  - Experience and qualifications with subject matter
- 2 Scalability of Research Project Results** **Maximum Possible Points: 20**
  - Research products can be used by other institutions/companies
  - Intellectual property issues
  - Technology Transfer potential
  - Market size
- 3 Need for Research Products** **Maximum Possible Points: 20**
  - Similarity of existing or soon-to-be-developed technology
  - Commercial demand or potential for products
  - Qualified companies available for product manufacture
  - Production or custom builders can easily adopt techniques
- 4 Potential Energy Impacts** **Maximum Possible Points: 20**
  - Research project addresses a significant energy issue
  - Project has potential to impact issue
  - likelihood of technical success
- 5 Connections to Marketplace** **Maximum Possible Points: 20**
  - Research products have conduit to marketplace
  - Companies and/or builders involved have strong market presence
  - Products meet or exceed relevant performance standards
  - Likelihood of commercial success

## **VI Energy Efficient Information and Communications Technology Applications (DE-FOA-0000107)**

- 1 Technical Merit** **Maximum Possible Points: 25**
  - Research project addresses a significant energy issue in the Information and Communications Technology industry. The project thoroughly describes the technical barriers, knowledge gaps and deficiencies that impede market penetration of energy efficiency technologies within the industry.
  - The current status of the proposed technology as it has been developed by the research and industrial community at large.
  - How the proposed project will address current barriers or knowledge gaps to advance the state-of-the-art and market acceptance.



- Past and current work in the subject technology performed by the project team and others, including successes and failures.

## **2 Description of Proposed RD&D**

**Maximum Possible Points: 30**

- The technical tasks are clearly and logically presented, with appropriate objectives, logical and discrete tasks, sequence of activities, products produced, deliverables, schedule, and budget.
- The application describes the scientific and technical principles underlying the proposed work, and the manner in which the scientific and engineering principles will be applied.
- The distinctive and innovative features of the approach are discussed.
- The likelihood of success based upon a sound research plan.

## **3 Performance Goals and Commercialization Path    Maximum Possible Points: 25**

- The extent to which the project addresses significant key issues and barriers to the development and market acceptance of energy efficiency technologies within the industry.
- Quantitative or measurable technical and economic performance goals and the methodology used to determine if the goals have been achieved.
- A reasonable path is described for commercialization of the technology if the project is successful.
- Market penetration goals or estimates are provided based on technical and economical potential.

## **4 Qualifications of Team and Institution**

**Maximum Possible Points: 20**

- The description demonstrates that the project team is qualified to undertake the proposed project.
- Project manager and team members have the technical capabilities and specific experience to successfully complete the project.
- The Project Manager can successfully manage the project, control cost, maintain the schedule, and report results and accomplishments in an effective manner.
- Project team has past success in taking research, development, and technology demonstration products to market and the experience, skills and market connections to help ensure market transfer of the products and knowledge that result from the project.

# **VII Advanced Energy Efficient Building Technologies Applications (DE-FOA-0000115)**

## **1 Technical Merit**

**Maximum Possible Points: 25**

- Research project addresses a significant energy issue in the Information and Communications Technology industry. The project thoroughly describes the technical barriers, knowledge gaps and deficiencies that impede market penetration of energy efficiency technologies within the industry.
- The current status of the proposed technology as it has been developed by the research and industrial community at large.
- How the proposed project will address current barriers or knowledge gaps to advance the state-of-the-art and market acceptance.
- Past and current work in the subject technology performed by the project team and others, including successes and failures.



- 2 Description of Proposed RD&D Maximum Possible Points: 30**
- The technical tasks are clearly and logically presented, with appropriate objectives, logical and discrete tasks, sequence of activities, products produced, deliverables, schedule, and budget.
  - The application describes the scientific and technical principles underlying the proposed work, and the manner in which the scientific and engineering principles will be applied.
  - The distinctive and innovative features of the approach are discussed.
  - The likelihood of success based upon a sound research plan.
- 3 Performance Goals and Commercialization Path Maximum Possible Points: 25**
- The extent to which the project addresses significant key issues and barriers to the development and market acceptance of energy efficiency technologies within the industry.
  - Quantitative or measurable technical and economic performance goals and the methodology used to determine if the goals have been achieved.
  - A reasonable path is described for commercialization of the technology if the project is successful.
  - Market penetration goals or estimates are provided based on technical and economical potential.
- 4 Qualifications of Team and Institution Maximum Possible Points: 20**
- The description demonstrates that the project team is qualified to undertake the proposed project.
  - Project manager and team members have the technical capabilities and specific experience to successfully complete the project.
  - The Project Manager can successfully manage the project, control cost, maintain the schedule, and report results and accomplishments in an effective manner.
  - Project team has past success in taking research, development, and technology demonstration products to market and the experience, skills and market connections to help ensure market transfer of the products and knowledge that result from the project.

**VIII Smart Grid and CO<sub>2</sub> Capture, Storage and Sequestration Applications (DE-FOA-0000058, DE-FOA-0000036, DE-FOA-0000032, DE-FOA-0000033, DE-FOA-0000015)**

**1. Technical Merit:**

**Maximum Possible Points: 20**

- The current status of the proposed technology as it has been developed by the research and industrial community at large.
- How the proposed project will address current barriers or knowledge gaps to advance the state-of-the-art and market acceptance.
- Past and current work in the subject technology performed by the project team and others, including successes and failures.
- The extent to which the project will address the objectives of the PIER Program.

### **3. Description of Proposed RD&D**

**Maximum Possible Points: 30**

- The technical tasks are clearly and logically presented, with appropriate objectives, logical and discrete tasks, sequence of activities, products produced, deliverables, schedule, and budget.
- The application describes the scientific and technical principles underlying the proposed work, and the manner in which the scientific and engineering principles will be applied.
- The distinctive and innovative features of the approach are discussed.
- The likelihood of success based upon a sound research plan.

### **3. Identified Targets, Goals, and Market Application**

**Maximum Possible Points: 25**

- The proposed project is cost-effective and will significantly help in adding additional capacity.
- The extent to which the project addresses significant key issues and barriers to the development and market acceptance of smart grid technology.
- Quantitative or measurable technical and economic performance goals and the methodology used to determine if the goals have been achieved.
- How the project will fulfill market needs. A reasonable path is described for commercialization of the technology if the project is successful.

### **4. Qualifications of Project Manager and Project Team**

**Maximum Possible Points: 25**

- The Project Manager and team members have the technical capabilities, specific experience and financial capability to successfully complete the project.
- The Project Manager can successfully manage the project, control cost, and maintain the schedule, and report results and accomplishments in an effective manner.
- The application clearly and adequately presents capabilities and experience of the team members to perform the proposed work for different tasks.
- The application presents the team members' collaboration to perform and facilitate transfer of project products to the marketplace. Is electric utility part of the team?
- The project cost is consistent with the work to be performed and is justified.
- The PIER funding request, match funding, and need for PIER funding are appropriate and consistent with the expected level of public benefits if the project is successful.

## **IX Community Renewable Energy Deployment (DE-FOA-0000122) applications**

### **1. Technical Merits:**

**Maximum Possible Points: 30**

- Extent to which the proposed effort is likely to produce technically valid solutions to issues that the proposer anticipates. (For example, technically meritorious project would materially reduce the technical and economic risks involved in community-wide implementation of a long term renewable energy deployment plan.)
- Extent to which the proposed work will increase the renewable energy capacity employing diverse renewable energy solutions along with energy efficiency and demand response, smart grid integration, combined cooling heating and power (CCHP), energy storage, and co-production of transportation fuels and other key aspects of local energy infrastructure.
- Adequacy of the discussion of state of the art and related prior work as appropriate.
- Adequacy of the discussion on the novelty, innovation, uniqueness, sustainability, and originality of the proposed work and technology advancements.
- Validity of the proposed technical approach and likelihood of success based on the soundness of scientific and engineering principles employed in the proposed renewable energy project(s).
- Adequacy of discussion on how the proposed project addresses current barriers and knowledge gaps and how the proposed project will meet the goals of California's Renewable Portfolio Standard, and California's Global Warming Solutions Act (AB 32).

### **2. Technical Approach:**

**Maximum Possible Points: 25**

- Extent to which the proposed project serves not only the planning and energy development goals of the community but does so in a way that serves as a model for other communities.
- Clarity and achievability of proposed technical approach.
- Extent to which the technical tasks are completely, clearly and logically presented, with appropriate objectives, discrete tasks and subtasks, logical sequence of activities, and reasonable schedule, and budget.
- Quantitative or measurable technical and economic performance objectives are clearly stated, well justified, and can be demonstrated using quantitative models and/or field measurements.
- Adequacy of discussion on the likelihood of success based upon a sound research or planning methodology.
- The proposed project cost is consistent with the work to be performed and is fully justified.
- The PIER cost share funding request are appropriate and consistent with the expected level of public benefits if the project is successful.

### **3. Technical Qualifications, Management and Project Team:**

**Maximum Possible Points: 20**

- Adequate evidence of organizational experience, knowledge, capabilities, and performance records that will enable the successful completion of the proposed project(s).

- Adequate evidence that the Project Manager can successfully manage the project, control costs, adhere to schedule, and report results and accomplishments in an effective and timely manner.
- Clear statement of capabilities and experience of team members to perform their portion of the proposed work scope.
- Capacity and collaboration to perform and facilitate transfer of project products to the marketplace.
- Level of participation by project participants (i.e., partners and subcontractors) are evidenced by letter(s) of commitment (both time and budget commitments). For public agencies or non-profit organization as applicant, adequate evidence of an authorizing resolution approved by the governing authority.
- Adequacy of discussion describing relevant past successes.
- Extent of beneficial collaboration across communities, utilities, industry, academia, state and federal agencies, and other interested parties.

#### **4. Market Connectedness**

**Maximum Possible Points: 25**

- Extent to which the Applicant has a clear and specific rationale for undertaking the project(s) in the context of prior and on-going work
- Extent to which the Applicant has or plans to develop relationships with communities exploring, developing, implementing or marketing a renewable energy vision.
- Level and appropriateness of resource commitment to adopt, market and commercialize project results by team and key members.
- Familiarity with trends, incentives and programs that may encourage or facilitate RE development.
- Adequate discussion on how the project(s) will fulfill market needs and accelerate deployment of renewable energy.
- Adequate discussion on reasonable path and strategy for commercialization of renewable energy projects.
- Willingness to license and market protected innovations of the project to other parties.
- Adequate and preferably quantitative discussion of public benefits to California electricity ratepayers and other stakeholders, including how well the project(s) support(s) California energy policy, or may provide a basis for informing future energy policy.
- Adequate discussion and analysis of expected economic competitiveness (e.g., using levelized costs analysis or benefits/costs analysis (whatever is appropriate)) of renewable energy implementation showing how comparisons will be made with business-as-usual energy planning for the community.

## ATTACHMENT I

### American Recovery and Reinvestment Act of 2009 Cost Share Topics Areas and Examples of Previously Funded Geothermal Projects

Funding for the geothermal component of this solicitation may include, but not be limited to, projects that address the following:

- Demonstrate and validate reservoir stimulation technologies.
- Reduce the risk and costs of geothermal site selection, exploration and characterization.
- Increase effectiveness and efficiency of reservoir management and sustainability.
- Reduce the life-cycle cost of geothermal electricity generation and improve power plant efficiency.
- Research, development and demonstration projects that reduce the uncertainty and cost of enhancing geothermal reservoir systems.
- Demonstrate and validate the feasibility of energy production from nonconventional geothermal resources such as low-temperature fluids, co-produced oil and gas brines or geopressured resources.

Examples of current and recently completed projects include the following:

- Application of InSAR to the Monitoring and Mitigation of Surface Substance from Increased Geothermal Development in the Imperial Valley, CA
- Structuring A Geothermal Heating District for Mammoth Lakes
- Integrated Geothermal Systems Simulator to Enhance Power Generation at the Geysers
- Pilot-Scale Geothermal Silica Recovery at Mammoth Lakes
- Structure of Salton Sea Geothermal Field from Passive Seismic Measurements
- Geothermal Exploration in Eastern California Using ASTER TIR Data
- Development of an Extended Logging Tool for Geothermal Exploration and Field Development
- Rhyolite Plateau Geothermal Exploration
- Drill And Complete Gmf 88-28 To Confirm The Existence Of A Commercial Geothermal Resource
- Dual Horizontally Completed Injection Well To Enhance Geothermal Production At The Geysers
- Fluid Inclusion Stratigraphy: A New Inexpensive Method For Geothermal Reservoir Assessment
- Geothermal Exploration Under The Salton Sea Using Marine Magnetotellurics
- Geothermal HVAC Conversion
- Drilling & Testing Of An Exploratory Well Truckhaven Geothermal Area, Imperial County, CA
- Geothermal Exploration Drilling, Assessment, & Demonstration In Indian Country

- Geothermal Reservoir Exploration By Fault Zone Guided Wave & Shear Wave Splitting Tomography
- Mineral Recovery From Geothermal Brine
- Fracture Permeability Mapping & Fluid Flow monitoring At The Geysers Geothermal Area
- Optimization Of Steam Field Management At The Aidlin Geothermal Project
- Evaporative Cooling Of Geothermal Power Plants With Recycled Water
- Co-Production Of Silica From Geothermal Fluids
- Improving Energy Recovery at the Geysers Geothermal Field by Delineation of In-Situ Saturation

### Topics Areas and Examples of Previously Funded Energy Research Projects

Examples of previously funded energy research projects can be found at the following website:

<http://www.energy.ca.gov/pier/portfolio/PIERwrite-ups.htm>.